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Life Tables for San Francisco Bay Area Counties

1980 and 1986 Through 1995

Association of Bay Area Governments • Oakland, California

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LIFE TABLES FOR SAN FRANCISCO BAY AREA COUNTIES
1980 and 1986 through 1995

I. INTRODUCTION

This document provides life tables at the county level on an annual basis for the nine counties of the Bay Area. Life tables provide a succinct description of what is the most prominent aspect of the state of human mortality: they show the varying chances of dying as a function of age and they summarize comparative longevity. Also, they provide reasonably accurate data on current trends in the expectation of life and survivorship. At the national and state level, life tables are published yearly. Since 1900, the U.S. Department of Health and Human Services' National Center for Health Statistics has prepared three series of life tables annually. For California, the Demographic Unit of the State Department of Finance publishes life tables in Data Matters or The California Statistical Abstract. The life tables are official documents, and have been utilized as legal evidence by lawyers, insurance analysts, actuaries, and pension planners, demographers, planners and other researchers since 1980.

Life tables answer questions such as:

(1) What is the life expectancy of a baby born in county x in the year 1995?

(2) Out of 1,000 persons in county Y who were 20 years old (at the beginning of labor force) in 1995, how many are likely to live to age 65 (when they are entitled to collect social security benefits)?

(3) What measure can be used to objectively compare mortality or mortality rates between many counties (areas), or between a region and the nation?

(4) How many years remain for the population group who is at age 65 in 1995?

There are two types of life tables--the "generation" or "cohort life table," and the "current life table." A generation life table shows the complete history of a generation, after most members of that generation have died. The life tables presented in this report are all "current life tables." They take a specific age group in a given year and use the prevailing death rates in that year to extrapolate an expected lifetime.

In general, the anatomy of life tables, the methodology for constructing them, and their interpretation are described in standard demographic books or reports (see Section V). In this report, the specific routine for constructing life tables follows the report titles "Methodology for Constructing Abridge Life Tables for California for 1977." Data Matters, No. 81-01021, Department of Health Services, California Center for Health Statistics, January 1981.

Preparation of county "current abridged life tables" is a part of ABAG's demographic research and population projection effort. ABAG supports member governments and interested parties in their demographic forecasting and related planning. ABAG makes long term population forecasts as a regional planning agency. A cohort survival model, in which a life table technique is employed to produce survival rates, is included as a demographic submodel of ABAG's regional forecasting model (RIS-Regional Information System), and its county and subcounty age/sex projection models.

The following section provides highlights of the derived life tables for the region, and individual counties. This section also includes a discussion of factors relating to variations of life expectancy and policy implications. Section III explains some demographic terms relevant to the study of life tables. Section IV lists the sources for the data that is the basis of this report. Section V provides a list of references.

Table 1

Life Expectancy at Birth (in years)
San Francisco Bay Region

Year	Total Population	Males	Females
1980	75.3	71.8	78.8
1986	76.5	73.0	80.0
1987	76.5	73.0	79.9
1988	76.5	73.0	80.0
1989	76.7	73.1	80.1
1990	76.4	73.0	79.7
1991	76.6	73.0	80.1
1992	77.3	73.7	80.9
1993	77.3	74.0	80.7
1994	77.8	74.4	81.2
1995	78.1	74.8	81.4

II. TRENDS AND COMPARISONS

Highlights of the Regional Trends

Life expectancies at birth for the residents of the San Francisco Bay Region for 1980 and from 1986 to 1995 are shown in Table 1. In 1995, the average life expectancy at birth reached a record high of 78.1 years, continuing the general upward trend in life expectancy in the region. This was an increase of 2.8 years from the life expectancy of 1980.

In 1995, the overall life expectancy of the region's females was 81.4 years compared with 74.8 years for males; both figures represent all time highs. For the total population, the trend of life

expectancy was generally increasing. The only exception is 1990, where there was a drop of 0.3 years from the previous year. Male life expectancy followed trends similar to the total population. There were more fluctuations in the female population as drops in life expectancy from the previous year occurred in three separate periods during the time series studied.

Table 2

Change in Life Expectancy at Birth (in years)
Bay Area

Year	Total Population	Males	Females
1980-1986	1.2	1.2	1.2
1986-1990	-0.1	0.0	-0.3
1990-1995	1.7	1.8	1.7
1980-1990	1.1	1.2	0.9
1980-1995	2.8	3.0	2.6
1986-1987	0.0	0.0	-0.1
1987-1988	0.0	0.0	0.1
1988-1989	0.1	0.2	0.1
1989-1990	-0.3	-0.1	-0.4
1990-1991	0.1	0.0	0.3
1991-1992	0.7	0.7	0.8
1992-1993	0.0	0.2	-0.2
1993-1994	0.5	0.4	0.5
1994-1995	0.2	0.3	0.2

Changes in life expectancy for the region's residents from 1980 to 1995 are shown in Table 2. With the greatest gains, an increase of 1.7 years, made in the last five-year period, 1991-1995. The earliest five-year period in our time series (1980-1986) registered an increase of 1.2 years. In contrast, there was a decline of 0.1 years between 1986-1990, when a declining life expectancy in the 1989-90 time period outweighed the small gains made in the previous four years. Fairly significant annual fluctuations in life expectancy can occur with little explanation. As a result, we try to focus on persistent, longer trends, as a way of separating real changes from random variability in the data.

Region versus California and United States Life Expectancy

Life expectancies at birth for the State of California's population from 1980 to 1994 are shown in Table 3. Similar statistics for the United States for the same period are shown in Table 4. 1994 is the most recent year available from published reports.

Table 3

Life Expectancy at Birth in California (in years)

Year	Total Population	Males	Females
1980	74.6	71.0	78.1
1986	75.9	72.3	79.3
1987	75.9	72.4	79.3
1988	75.9	72.5	79.3
1989	76.3	72.8	79.7
1990	76.2*	72.8	79.5
1991	76.6*	73.3	80.4
1992	76.5	73.6	80.3
1993	77.0	73.8	80.3
1994	77.4	74.2	80.5

* ABAG's estimate

Table 4

Life Expectancy at Birth (in years)
United States

Year	Total Population	Males	Females
1980	73.7	70.0	77.4
1986	74.8	71.3	78.3
1987	75.0	71.5	78.4
1988	74.9	71.5	78.3
1989	75.3	71.8	78.5
1990	75.4	71.8	78.8
1991	75.5	72.0	78.9
1992	75.8	72.3	79.1
1993	75.5	72.2	78.8
1994	75.7	72.3	79.0

Both the state and the nation showed a general upward trend in life expectancies. In 1994, life expectancy at birth for the entire state was 77.4 years, an increase of 2.8 years since 1980. Similarly, the population in United States had a life expectancy of 75.7 years in 1994, an increase of 2 years since 1980. Examining the comparable period of 1980-1994, residents of the entire nation had an increase of 2 years of life expectancy at birth, California had the largest increase, 2.4 years, and Bay Area life expectancy increased by 2.5 years.

Tables 5 and 6, compare life expectancy in the Bay Area to California, and the Bay Area to the U.S. In almost every year, the region's life expectancy exceeded that of both the state and the nation. While Bay Area life expectancy exceeded the state average by 0.7 years in 1980, that gap had narrowed to 0.4 years in 1994. Since the Bay Area, and California, had higher live expectancies than the U.S. generally in 1980, and higher growth rates, by 1994 California and the Bay Area had extended their leads in life expectancy over the U.S. average.

Table 5

Difference in Life Expectancy at Birth (in Years)
Bay Region vs. California

Year	Total Population	Males	Females
1980	0.7	0.8	0.7
1986	0.6	0.7	0.7
1987	0.6	0.6	0.6
1988	0.6	0.4	0.7
1989	0.4	0.3	0.4
1990	0.2	0.2	0.2
1991	0.0	-0.3	-0.3
1992	0.8	0.1	0.6
1993	0.3	0.3	0.4
1994	0.4	0.2	0.7

Table 6

Difference in Life Expectancy at Birth (in Years)
Bay Region vs. U. S. A.

Year	Total Population	Males	Females
1980	1.6	1.8	1.4
1986	1.7	1.7	1.7
1987	1.5	1.5	1.5
1988	1.6	1.5	1.7
1989	1.4	1.3	1.0
1990	1.0	1.2	1.6
1991	1.1	1.0	1.2
1992	1.5	1.4	1.8
1993	1.8	1.9	1.8
1994	2.1	2.1	2.2

Factors relating to life expectancy are complex and numerous. Since life tables are derived primarily from age specific death rates, which are the number of deaths by age group, many studies on variations of life expectancy focus on the impacts of degenerate diseases and the population makeup (Department of Health Service, August 1993.) In this study, there is no major effort to unravel casual factors in explaining variations of life expectancy at birth of the Bay Area residents. However, a number of factors cited in recent studies would appear to have some bearing on the differences in life expectancy.

Ethnicity is argued to have a great influence on life expectancy. Asians and Hispanics, particularly females, live longer than others groups. African Americans have shorter life spans on average. The reasons for different life expectancies between racial groups are far from clear. While African Americans are susceptible to problems related to hypertension, economic factors are also critically important. Asians and Hispanics may live longer due to the diets, or other traditional aspects of those groups' cultures. However, while the underlying reasons are not clear, the proportion of Asians and Hispanics in the populations of California and the Bay Area appear to be part of the explanation for longer life expectancy for the overall population.

The social and economic conditions of the studied population have an important bearing on life expectancies. Low-income populations may be forced to neglect health care. Low-income populations are also more likely to be subject to violence. Higher overall income levels in the Bay Area and California, may also be part of the explanation, or associated with the explanation for longer life expectancy.

Table 7

Number of Years That Female Life Expectancy
Exceeded Male Life Expectancy
San Francisco Bay Region, California, and The United States

Year	Bay Region	California	United States
1980	7.0	7.1	7.4
1986	7.0	7.0	7.0
1987	7.0	6.9	6.9
1988	7.0	6.7	6.8
1989	7.0	6.9	6.7
1990	6.7	6.7	7.0
1991	7.1	7.1	6.9
1992	7.2	6.7	6.8
1993	6.7	6.6	6.6
1994	6.8	6.3	6.7
1995	6.6		

Lifestyles can have a great effect on life expectancy. Health-conscious populations tend to pay more attention to their nutritional intake, quit smoking, exercise regularly, and enjoyed longer lives in general. One recent survey, the first of its kind, indicates that a smaller proportion of Californians smoke cigarettes than the U.S. population generally. 15.5% of Californians were cigarette smokers in 1995, the second lowest rate of cigarette smoking among states (Utah was the lowest). On average 22.4% of Americans smoked, and the rate of smoking among states ranged from 13.2% to 27.8%.

Gender Gaps

The life expectancies at birth for Bay Area's male and female populations differ by about seven years, as shown in Table 7. For almost a decade, from 1980 to 1989, this margin was exactly seven years, reflecting exact synchronization of changes in male and female life expectancies. In 1990, the difference dropped to 6.7. In the following two years, the margin climbed above seven years. In the most recent three years, it fell to below seven. The last year (1995) showed a difference of 6.6 years, an all time low in the 16 years of study. The lower values in recent years are consistent with an apparent closing of the gender gap in California and the U.S.

Gender differences in the California and the nation's life expectancy at birth are presented in the second and third columns of Table 7. The Bay Area generally had wider gender gaps than the state and the nation. The only noticeable exception is posted in 1980, the beginning year of the time series. Beyond that year, gender gaps in the nation were 7 years or less.

Life Expectancy at Age 65

It is interesting to study life expectancy at the age of 65 since it is the traditional retirement age. Many studies of aging related issues focus on this particular age cohort. The Bay Area's life expectancies at 65 are shown in Table 8. The first column shows an almost monotonous increase over the studied years for the total population, resulting in an increase of almost two years. 65 year olds in the region could expect to live an additional 17.1 years in 1980. That number had increased to 19.0 years in 1995. The 65-year-old male population's life expectancy increased 2.5 years over the same 15-year period. This is compared with an increase of 1.5 years for female population, (see column 2 and 3 of the table). At age 65, females' life expectancy dominates males'. However, the gender gap appears to be narrowing, dropping by one year, from 4.3 years in 1980 to a gap of 3.3 years in 1995.

In almost every year of this study, Bay Area's 65 year old residents had a greater life expectancy than that of California and the nation's residents, see Tables 9 and 10. In most years, Bay Area's senior citizens outlived the state's by about one fifth of a year. Similarly, the Bay Area's senior residents outlived the nation's senior population by a full year. While there is also a variety of factors effecting life expectancy at age 65, ethnic diversity, income, and lifestyle choices will have as much to do with life expectancy at this age, as they do with life expectancy at birth.

Table 8

Life Expectancy at 65 (in years)
San Francisco Bay Region

Year	Total Population	Males	Females
1980	17.1	14.7	19.0
1986	17.9	15.8	19.6
1987	17.9	15.8	19.5
1988	18.0	16.0	19.5
1989	18.1	16.1	19.7
1990	18.1	16.2	19.6
1991	18.2	16.1	19.8
1992	18.7	16.7	20.2
1993	18.6	16.9	20.0
1994	18.9	17.1	20.5
1995	19.0	17.2	20.5

Table 9

Difference in
Life Expectancy at 65 (in years)
Bay Region vs. California

Year	Total Population	Males	Females
1980	0.2	0.0	0.2
1986	0.2	0.2	0.2
1987	0.2	0.2	0.2
1988	0.2	0.2	0.3
1989	0.0	0.0	0.0
1990	0.2*	0.2	0.2
1991	-0.4*	-0.3	-0.5
1992	0.2	0.1	0.3
1993	0.1	0.2	0.1
1994	0.2	0.0	0.3

* ABAG's estimate

Table 10

Difference in
Life Expectancy at 65 (in years)
Bay Region vs. U. S. A.

Year	Total Population	Males	Females
1980	0.6	0.5	0.6
1986	1.1	1.1	1.0
1987	1.0	1.0	0.8
1988	1.1	1.1	0.9
1989	0.9	0.9	0.8
1990	0.9	1.1	0.7
1991	0.8	0.8	0.7
1992	1.2	1.3	1.0
1993	1.3	1.6	1.1
1994	1.5	1.6	1.5

County Life Expectancy*

Life Expectancy by Gender Life expectancies at birth for residents of individual counties in the region in 1980, and 1986 through 1995 are presented in Tables 11-13 by gender. The region's overall life expectancies are also noted. For this fifteen-year period, most life expectancies were between 75 and 80 years of age. They ranged from the lowest of 72.4 years in San Francisco County in 1991 to 80 years in Santa Clara County in 1995. Santa Clara was the only county in which life expectancy reached 80 during the years studied.

For total population, Napa County had the highest life expectancy of 77.3 years in the region in 1980. Santa Clara County was ranked as having the highest life expectancy in six out of eleven years of this study. San Mateo County was top ranked in three consecutive years from 1987 to 1989. Solano County had the lowest life expectancy in the region for three years and San Francisco had the lowest for eight years.

Life expectancies at birth for males are shown in Table 12. They ranged from 66.4 years for San Francisco in 1991 to 77.5 years for Santa Clara County in 1995. Similar to the life expectancies for total population, Santa Clara County male residents tend to have the highest values in the later years. By contrast, Alameda County's male residents had lower life expectancies than all other counties in the region except San Francisco County, which showed the lowest male life expectancies for all years.

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* Life tables by county and gender for 1980 and 1986 through 1995 are available at ABAG.

Table 11

Life Expectancy of Total Population
San Francisco Bay Area County
1980, 1986 through 1995

	1980	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Region	75.3	76.5	76.5	76.5	76.7	76.4	76.6	77.3	77.3	77.8	78.1
Alameda	74.3	75.9	76.0	76.0	75.7	75.5	75.7	76.5	76.5	77.0	77.1
Contra Costa	75.8	76.7	76.3	76.4	76.3	76.8	77.0	78.5	78.0	78.7	78.5
Marin	76.4	77.2	77.3	77.2	77.5	78.1	77.8	79.2	78.4	78.6	79.3
Napa	77.3	77.1	76.4	77.4	76.7	76.6	78.0	77.9	77.4	77.4	77.7
San Francisco	73.4	74.8	74.6	74.6	74.8	72.6	72.4	72.9	73.8	74.0	75.1
San Mateo	76.2	77.6	77.8	78.1	78.4	77.6	78.1	78.3	78.6	79.2	79.0
Santa Clara	76.3	77.6	77.4	77.2	77.8	78.1	78.6	79.1	78.9	79.4	80.0
Solano	75.1	74.4	74.6	74.9	74.8	75.6	75.7	76.6	77.3	77.7	77.7
Sonoma	75.4	76.1	76.2	75.9	76.1	77.0	76.8	77.3	77.3	77.9	78.3

Table 12

Life Expectancy of Males
San Francisco Bay Area County
1980, 1986 through 1995

	1980	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Region	71.8	73.0	73.0	73.0	73.1	73.0	73.0	73.7	74.0	74.4	74.8
Alameda	70.6	72.4	72.7	72.7	72.1	72.2	72.1	73.0	73.2	73.6	73.7
Contra Costa	72.7	73.6	73.3	73.2	73.5	73.8	73.8	75.2	74.9	75.7	75.2
Marin	73.6	74.5	74.4	74.6	74.7	75.5	74.8	77.0	75.9	76.1	76.8
Napa	74.2	74.0	73.3	74.2	74.1	73.3	74.3	74.3	74.6	74.1	75.0
San Francisco	69.8	69.2	69.0	68.7	68.9	66.7	66.4	66.6	68.0	68.2	69.6
San Mateo	72.7	74.6	74.8	74.9	75.5	74.7	75.1	75.1	75.7	76.1	76.2
Santa Clara	72.8	75.0	74.6	74.6	75.1	75.4	75.9	76.3	76.3	76.8	77.5
Solano	72.0	71.1	71.5	72.7	72.3	73.0	73.2	73.9	74.8	75.0	74.7
Sonoma	71.6	72.4	72.4	71.8	72.5	74.1	73.7	74.2	74.5	74.8	75.4

Table 13

Life Expectancy of Females
San Francisco Bay Area County
1980, 1986 through 1995

	1980	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Region	78.8	80.0	79.9	80.0	80.1	79.7	80.1	80.9	80.7	81.2	81.4
Alameda	77.8	79.2	79.1	79.1	79.3	78.6	79.1	79.9	79.7	80.3	80.4
Contra Costa	78.8	80.0	79.1	79.6	78.9	79.7	80.0	81.5	80.9	81.5	81.5
Marin	78.8	79.6	80.1	79.7	80.0	80.6	80.8	81.2	80.8	81.1	81.6
Napa	80.4	80.2	79.5	80.5	79.3	80.1	81.8	81.8	80.3	80.8	80.5
San Francisco	78.0	81.1	80.9	81.4	81.5	79.7	79.7	80.8	80.9	81.1	81.6
San Mateo	79.6	80.4	80.6	81.0	81.0	80.4	80.9	81.3	81.5	82.2	81.6
Santa Clara	79.5	80.1	80.1	79.7	80.4	80.6	81.1	81.7	81.5	81.8	82.3
Solano	78.3	78.0	77.8	77.2	77.2	78.1	78.2	79.4	79.7	80.5	80.8
Sonoma	79.4	79.8	79.9	80.0	79.7	79.7	79.8	80.2	80.1	81.0	81.2

While the reasons for the variation in life expectancy are very complex, the low life expectancy for males in San Francisco County is clearly, and significantly, affected by AIDS related deaths. San Francisco County's population is 12% of the regional total, 60.6% of AIDS related deaths occurred to residents in that county in 1990. By 1995 the number of AIDS related deaths had leveled-off, and had begun to disburse across the region. However, 50.5% of all AIDS related deaths occurred to San Franciscan. The male population suffered over 90% of all AIDS related deaths.

Table 13, showing the life expectancies of female residents in the region's nine counties, has a very different pattern from the male life expectancies in Table 12. The highest female life expectancies were found in San Francisco County from 1986-89, Napa County in 1980, 1991 and 1992, and Santa Clara County in 1990, 1993 and 1995. The lowest life expectancies were in Solano, from 1986 through 1992, and Alameda, for 1993-1995. Since San Francisco's female life expectancies were consistently high, it had the most significant gap between female and male life expectancies. Conta Costa County also had an unusually large gap between its male and female life expectancies. However, the reasons for the difference in Contra Costa County does not appear to be significantly associated with any particular cause of death.

Changes in Life Expectancy Changes in life expectancies at birth for the Bay Area's counties are presented in Table 14. Total, male and female population are shown for three consecutive five years periods and for the entire fifteen years. Almost all counties achieved gains in life expectancies over the fifteen-year time span. San Francisco County was the only county to suffer a slight drop: 0.2 years for the male population's life expectancy. The male population made larger gains than the female population in every county, except Contra Costa.

Four counties suffered a decline in life expectancy in 1980-1986 and 1986-1990: Alameda, Napa, San Francisco, and Solano County. All county and gender group achieved life expectancy gains between 1990-1995. This period is consistent with a reported drop in the cancer death rate.

During 1980-1986, Alameda County had the highest increase in life expectancies. During this period, the male population of Santa Clara was the top ranked county with a gain of 2.2 years, while San Francisco County's female residents gained faster than any other county, adding 3.1 years. Recovering from a drop in 1980-1986, Solano County's total population gained in 1986-1990, at a time when many of the county's life expectancies were actually declining. San Francisco County's total population made significant life expectancy gains during 1990-1995. These gains were attributable to a rebounding of the male population's life expectancy in the county (2.8 years). Solano County's female residents achieved a remarkable gain of 2.7 years in the same five-year period.

Table 15 ranks county gains in life expectancies at birth for each county's total population between 1980 and 1995. A ranking of 1 indicates the highest life expectancies increase and a ranking of 9 signifies the lowest increase. The last column of the table repeats the figures for 1995 county life expectancies. There was a significant difference of more than three years between the highest and the lowest gains of county life expectancy, ranging from 0.4 in Napa County to 3.7 years in Santa Clara County. Santa Clara County stands out as the county that achieved the highest life

Table 14

Changes of Life Expectancy (years)
San Francisco Bay Area County

	1980-1986	1986-1990	1990-1995	1980-1995
TOTAL				
Region	1.2	-0.1	1.7	2.8
Alameda	1.6	-0.4	1.7	2.8
Contra Costa	0.9	0.1	1.7	2.7
Marin	0.8	0.9	1.2	2.9
Napa	-0.2	-0.5	1.1	0.4
San Francisco	1.4	-2.2	2.5	1.7
San Mateo	1.4	0.0	1.4	2.8
Santa Clara	1.3	0.5	1.8	3.7
Solano	-0.7	1.2	2.1	2.6
Sonoma	0.7	0.9	1.4	2.9
MALES				
Region	1.2	0.0	1.8	3.0
Alameda	1.8	-0.2	1.5	3.1
Contra Costa	0.9	0.2	1.5	2.5
Marin	0.9	1.0	1.3	3.2
Napa	-0.2	-0.7	1.7	0.8
San Francisco	-0.6	-2.5	2.8	-0.2
San Mateo	1.9	0.1	1.5	3.5
Santa Clara	2.2	0.4	2.0	4.7
Solano	-0.9	1.9	1.7	2.7
Sonoma	0.8	1.7	1.3	3.8
FEMALES				
Region	1.2	-0.3	1.6	2.6
Alameda	1.4	-0.6	1.8	2.6
Contra Costa	1.2	-0.3	1.8	2.7
Marin	0.8	1.0	1.1	2.8
Napa	-0.2	-0.1	0.3	0.1
San Francisco	3.1	-1.4	1.9	3.6
San Mateo	0.8	0.0	1.1	2.0
Santa Clara	0.6	0.5	1.7	2.8
Solano	-0.3	0.1	2.7	2.5
Sonoma	0.4	-0.1	1.5	1.8

Table 15

Ranking and Increase of County Life Expectancy
Rank Ordered by Gains During 1980-1995
San Francisco Bay Area Region

County	Rank	Years Gained (1980-1995)	1995 Life Expectancy
Region	-	2.8	78.1
Santa Clara	1	3.7	80.0
Sonoma	2	2.9	78.3
Marin	3	2.8	79.3
Alameda	4	2.8	77.1
San Mateo	5	2.8	79.0
Contra Costa	6	2.7	78.5
Solano	7	2.6	77.7
San Francisco	8	1.7	75.1
Napa	9	0.4	77.7

Table 16

Differences of Life Expectancy at Birth (in Years)
between the Highest and Lowest County, 1980-1995
San Francisco Bay Area Region

Year	Total	Male	Female
1980	3.9	4.4	2.6
1986	3.2	5.8	3.1
1987	3.2	5.8	3.1
1988	3.5	6.2	4.2
1989	3.6	6.6	4.3
1990	5.5	8.8	2.5
1991	6.2	9.5	3.6
1992	6.3	10.4	2.4
1993	5.1	8.3	1.8
1994	5.4	8.6	1.9
1995	4.9	7.9	1.9

expectancy gain of 3.7 years in fifteen years. It also has the longest life expectancy: over 80 years. The next group of counties, Sonoma, Marin, Alameda, San Mateo, Contra Costa, and Solano added about two years to life expectancies. The last two counties, San Francisco and Napa, had comparatively meager increases of less than two years.

Table 16 shows the ranges (difference between the highest and the lowest county) of life expectancies among region's nine counties by year and gender. Ranges in the nineties were greater than the ranges for total population in the eighties. The largest range for the total population was found in 1992, 6.3 years. Ranges for the male population followed the trend of the total population. Males' ranges showed much more fluctuation than the females' ranges. The peak value of males reached 10.4 in 1992. In contrast, the range of female life expectancies reached a high of 4.3 years in 1989. During the last three years of the series from 1993 to 1995, female's ranges were less than two years, suggesting that the region's female life expectancies may be converging.

County Gender Gaps in Life Expectancy Gender gaps narrowed slightly between counties, as seen in Table 17. Two exceptional counties are San Francisco and Contra Costa County. San Francisco County had an increase of 3.9 years between 1980 and 1995. In San Francisco County, differences in most years stayed between 11 and 14 years. Contra Costa County suffered only slight widening of gender gap.

There were wide ranges of gender differences in the life expectancy among the region's nine counties. Overall, both the largest and the smallest differences were found in 1992. The largest was in San Francisco County (14.2 years) and the smallest was in Marin County (4.2 years). For all the years of study, San Francisco had the largest difference between male and female population among nine counties in the region. These differences range from the lowest one of 8.2 years in 1980 to the highest one of 14.2 years in 1992. In six out of eleven years, Marin County's gender differences were the smallest in the region. In other four years, Solano County had the smallest gender differences.

Public Policy Implications

In this study of life tables, there are several important implications for public policy. If one of the goals of the political entity is to maintain or improve the already high life expectancy of Bay Area residents, policies should aim to help these residents to stay healthy. These policies could include public health education for residents of all ages, about healthy diet and exercise, and the advocacy and support of healthy lifestyle choices.

Challenges for communities may include implementation of effective policies on the illness prevention and wellness enhancement throughout their residents' life span. Health promotion and prevention programs, affordable and easily available preventative health programs, early detection methods, and screening, etc. are examples of potential programs. In our diverse region, effective policy programs may include widespread dissemination of cultural, linguistic, and age-appropriate information and education materials on medical self-care and prevention programs. This is to encourage residents to assume more personal responsibility for the state of their health.

Table 17

Gender Differences of Life Expectancy
San Francisco Bay Area County
1980, 1986 through 1995

	1980	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Region	7.0	7.0	7.0	7.0	7.0	6.7	7.1	7.3	6.8	6.9	6.6
Alameda	7.2	6.8	6.5	6.4	7.2	6.4	7.1	6.9	6.5	6.7	6.7
Contra Costa	6.1	6.4	5.8	6.4	5.4	5.9	6.2	6.3	6.0	5.9	6.3
Marin	5.2	5.1	5.7	5.1	5.3	5.1	5.9	4.2	5.0	5.0	4.8
Napa	6.2	6.2	6.2	6.3	5.3	6.8	7.5	7.5	5.8	6.7	5.4
San Francisco	8.2	11.9	11.9	12.7	12.6	13.0	13.3	14.2	12.9	12.9	12.1
San Mateo	6.9	5.8	5.8	6.1	5.6	5.7	5.8	6.3	5.8	6.1	5.3
Santa Clara	6.7	5.1	5.5	5.1	5.2	5.1	5.2	5.5	5.2	5.0	4.8
Solano	6.3	6.9	6.4	4.5	4.8	5.1	4.9	5.5	4.9	5.5	6.1
Sonoma	7.8	7.4	7.5	8.2	7.2	5.6	6.1	6.0	5.6	6.2	5.8

Another public policy implication has to do with the graying of the population. Mainly due to the increases in life expectancies in the region, our region's population continues to age. In 1980, half the population was under 30; by 2015, at least half could be 39 or older (ABAG, Projections 96.) The number of persons aged 65 or older is projected to increase by 2.4 times between 1980 and 2015. The ratio of elderly persons to those of working age (20 to 64 years) for the region will increase from 16.8 percent in 1980 to 28.5 percent in 2015.

The sheer size and diversity of the elderly population will continue to accentuate the importance of public policy for this important segment of the population. Policies addressing the increasing demand for adequate senior care and services (housing, medical, mobility, safety, cultural, recreational, etc.) are likely to assume greater importance in the future. As we extend our longevity, we must ensure the provision of an acceptable quality of life in the later years.

One important policy implication of the high expectancy of life at birth is on labor force participation. Will people in the Bay Area who are enjoying longer life expectancy, work longer years and retire later than the people in the state or the nation in the future? A more-educated labor force tends to have longer work lives, and Bay Area residents are the better-educated in the state or nation. As the trend toward an increased retirement age and limitations on retirement benefits will encourage longer work lives. This is the case particularly among that part of the population that has come to enjoy above-average salaries. As the economy shifts toward information based industries, and away from jobs based on physical strength, older members of the population may also see greater opportunities for longer work lives.

III. EXPLANATION OF TERMS

Life Table	a model of what would happen to a hypothetical birth cohort if the age-specific death rates for a given period were to remain constant and were to apply throughout the experience of an entire generation
Period Life Table	or Cross-Section, Current, or Time-Specific Life Table, considers a hypothetical cohort and assumes that it is subject to the age-specific rates observed for an actual population during the study period
Complete Life Table	life table constructed using every single year of age from birth to the last applicable age
Abridged Life Table	life table built using groups of ages greater than single year, generally five years
Generation Life Table	Cohort or Longitudinal Life Table, a life table based on the complete history of a particular birth cohort-i.e., the table is constructed after all or almost all members of the birth cohort have died

Death Rate	the probability of death within next year, calculated for each year of age and is used in model to calculate the projected deaths in the area of interest
Cohort	a group of people born in a given time period
Cohort Survival Model	a quantitative demographic model to project age-gender-group-aggregated population for a geographic area
Expectation of Life	the average number of years of life remaining for persons who have attained a given age-one of the most frequently used statistics

IV. DATA SOURCES

To produce Bay Area County life tables, following three demographic data are required for each of the 19 age cohorts, in nine counties and two gender groups:

1. Population estimates by Department of Finance, State of California are available for 1980, 1985, 1990 and 2000. Interpretation provided **population estimate** for intervening years

2. Center for Health Statistics, Department of Health Services, State of California supplied **number of death** by the county of residence. For years after 1989, death data are obtained from machine readable files of Microcomputer Death Surveillance.

3. Health Data and Statistics Branch, Department of Health Services, State of California tabulated "**Proportion Dying During Age Interval**" in the annual publication of Abridged Life Tables for California

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